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PATENT SPECIFICATION
DRAWINGS ATTACHED

931694



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Date of Application and filing Complete Specification Nov. 6, 1959.
No. 37802/59.

Application made in Germany (No. B52534 VIIIb/21d1) on March 19, 1959.

Application made in Germany (No. 53559 VIIIb/21d1) on June 10, 1959.

Complete Specification Published July 17, 1963.

Index at acceptance:—Class 35, A(5L:7E).

International Classification:—H02k.

COMPLETE SPECIFICATION

An Electric Motorstarter having a Slot Insulation Unit

ERRATUM

SPECIFICATION NO. 931,694.

Page 1, heading, for "An Electric motor starter" read "An Electric motor stator"

THE PATENT OFFICE,
12th December, 1963

D 84895/1(1)/R.109 200 12/63 PL

15 to provide an electric motor stator core having an improved slot insulation unit.

According to the invention an electric motor stator core has a slot insulation unit comprising a plurality of flexible open sided slot insulating sleeves connected together by a flange so that the slot insulating sleeves may be jointly introduced into the stator slots, and in which the slot insulating sleeves are constructed to project slightly from the ends of the stator core and at the end remote from the flange are of increased material thickness and are flared outwardly so that they are secured against axial movement.

According to a feature of the invention the slot insulation unit is of a synthetic resin in which the flange, connecting together the slot insulating sleeves, is flexibly mounted with respect to the stator and in which the sleeves are closable in known manner by a cap preferably also of synthetic resin.

According to another feature of the invention, the flange is divided into several sectors which connect together the corresponding slot insulating sleeves, which may be of different sizes.

According to another feature of the invention the flange is provided with a radially outwardly extending lip, which prevents a supply cable from being damaged on the edge of the stator laminations.

[Price 4s. 6d.]

The production of these insulating parts as integral units comprising slot-insulating sleeves and connecting flange or flange sectors may be effected by an injection or jet-moulding method, or by a dripping method, using a synthetic resin capable of hardening, and a tool formed as a template or mould.

Several constructions according to the invention are illustrated by way of example in the accompanying drawings, in which:—

Figures 1 and 2 are respectively a longitudinal section on line A—B of Figure 2, and an end view of the insulation units;

Figures 3a, 3b and 3c and 3d are enlarged cross-sections of various alternative flanges of the units;

Figures 4a, 4b and 4c are cross-sections on line C—D of Figure 1 of slot insulating sleeves of two alternative shapes, and in which Figure 4a shows a slot-insulating sleeve with the sealing cap inserted; and

Figure 5 is a cross-section of a slot-insulating sleeve looking at it from line E—F of Figure 2.

Referring to the drawings Figures 1 and 2 show a flexible synthetic resin insulating unit comprising an annular flange 1 and a multiplicity of slot-insulating sleeves. The outer edge of the annular flange may be circular, as indicated within arc a, or it may be recessed, as indicated within arc b, or it

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An Electric Motorstarter having a Slot Insulation Unit

We, BROWN, BOVERI & CIE AKTIEN-GESELLSCHAFT, a Germany Company, of Postfach A3 (17a), Mannheim 1, Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

In electric motors, it is known to provide slot-insulation units for the stator core, which are formed as a series of flexible insulating tubes integrally connected together by flanges.

It is among the objects of the invention to provide an electric motor stator core having an improved slot insulation unit.

According to the invention an electric motor stator core has a slot insulation unit comprising a plurality of flexible open sided slot insulating sleeves connected together by a flange so that the slot insulating sleeves may be jointly introduced into the stator slots, and in which the slot insulating sleeves are constructed to project slightly from the ends of the stator core and at the end remote from the flange are of increased material thickness and are flared outwardly so that they are secured against axial movement.

According to a feature of the invention the slot insulation unit is of a synthetic resin in which the flange, connecting together the slot insulating sleeves, is flexibly mounted with respect to the stator and in which the sleeves are closable in known manner by a cap preferably also of synthetic resin.

According to another feature of the invention, the flange is divided into several sectors which connect together the corresponding slot insulating sleeves, which may be of different sizes.

According to another feature of the invention the flange is provided with a radially outwardly extending lip, which prevents a supply cable from being damaged on the edge of the stator laminations.

[Price 4s. 6d.]

According to a still further feature of the invention, a method of manufacturing slot insulation for the stator cores of electric motors is provided in which, the flange together with the insulating sleeves is produced in one piece from a synthetic resin by a spraying or dipping process.

The slot-insulating sleeves are flared out, and the cross-section of the flange shaped so that the whole insulating unit is resiliently mounted all round against the stator plates and in the slots, and is thus locked in position in both axial directions as well as in the radial direction.

The production of these insulating parts as integral units comprising slot-insulating sleeves and connecting flange or flange sectors may be effected by an injection or jet-moulding method, or by a dripping method, using a synthetic resin capable of hardening, and a tool formed as a template or mould.

Several constructions according to the invention are illustrated by way of example in the accompanying drawings, in which:—

Figures 1 and 2 are respectively a longitudinal section on line A—B of Figure 2, and an end view of the insulation units;

Figures 3a, 3b and 3c and 3d are enlarged cross-sections of various alternative flanges of the units;

Figures 4a, 4b and 4c are cross-sections on line C—D of Figure 1 of slot insulating sleeves of two alternative shapes, and in which Figure 4a shows a slot-insulating sleeve with the sealing cap inserted; and

Figure 5 is a cross-section of a slot-insulating sleeve looking at it from line E—F of Figure 2.

Referring to the drawings Figures 1 and 2 show a flexible synthetic resin insulating unit comprising an annular flange 1 and a multiplicity of slot-insulating sleeves. The outer edge of the annular flange may be circular, as indicated within arc *a*, or it may be recessed, as indicated within arc *b*, or it

may be undulated throughout as indicated within arc *c*. This last construction will generally be preferred on account of the saving in weight obtained.

5 The cross-sections of the flange 1, representative designs of which are shown in Figures 3*a*, 3*b*, 3*c* and 3*d*, are selected for the same reason.

10 For ease of manufacture, the flange 1 may be divided into a number of sectors; as shown in Figures 1 and 2, the flange carries at its periphery a lip-like extension 4 by which the supply-cable, not shown, is protected against being damaged by the edges

15 of the stator plates.
Figure 4*b* shows an insulating sleeve 2 in the non-inserted state, in which it therefore, does not yet correspond to the cross-section of the slot, whereas 4*a* shows the sleeve 2 after it has been introduced into a slot and sealed by a sealing cap 5. Figure 20 4*c* shows an insulating sleeve 3 of a different construction, in which the flanks or sides are bent inwardly.

25 As illustrated, on an enlarged scale, in Figure 5, the insulating sleeves 2, are of increased material thickness and are flared out at their free ends 6 which axially project slightly from the stator plates, so that the sleeves are resiliently held in position in 30 the slots.

WHAT WE CLAIM IS:—

1. An electric motor stator core having a slot insulation unit comprising a plurality 35 of flexible open sided slot insulating sleeves connected together by a flange so that the slot insulating sleeves may be jointly introduced into the stator slots, and in which the slot insulating sleeves are constructed 40 to project slightly from the ends of the stator core and at the end remote from the flange are of increased material thickness and are flared outwardly so that they are secured against axial movement.

2. An electric motor stator core having a slot insulation unit according to Claim 1, 45 in which the unit is formed from a synthetic resin.

3. An electric motor stator core having a slot insulation unit according to Claim 1 50 or Claim 2, in which the flange connecting together the slot insulating sleeves is flexibly mounted with respect to the stator core.

4. An electric motor stator core having a slot insulation unit according to any of 55 Claims 1 to 3, in which the flange is divided into several sectors which connect together the corresponding slot insulating sleeves.

5. An electric motor stator core having a slot insulation unit according to Claim 4, 60 in which the flange or its sectors connect together insulating sleeves of different sizes.

6. An electric motor stator core having a slot insulation unit according to any one 65 of Claims 1 to 5, in which the flange is provided with a radially outwardly extending lip for preventing a supply cable from being damaged on the edges of the stator laminations.

7. An electric motor stator core having a slot insulation unit according to any one 70 of Claims 1 to 6, in which the slot insulation sleeves are closable in known manner by a slot closure cap preferably of a synthetic resin material. 75

8. A method of manufacturing the slot insulation unit constructed according to any one of Claims 1, 2, 3, 6 or 7, in which 80 the flange together with the insulating sleeves is produced from a synthetic resin by a spraying or dipping process.

9. An electric motor stator core having a slot insulation unit substantially as herein- 85 before described with reference to the accompanying drawings.

EDWARD EVANS & CO.,
53—64, Chancery Lane, London, W.C.2,
Agents for the Applicants.

Fig.1
(A-B)

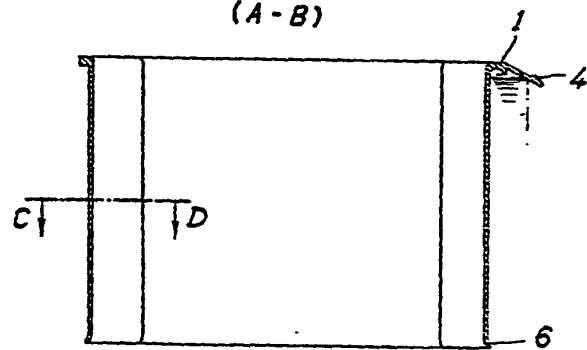
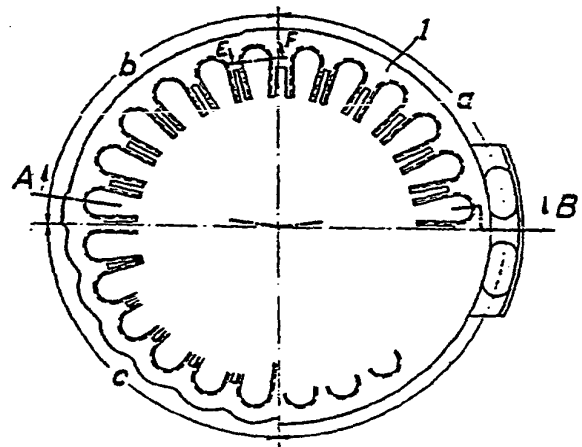


Fig.2



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2 SHEETS

This drawing is a reproduction of
the Original on a reduced scale
Sheets 1 & 2

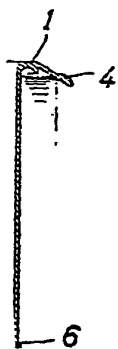


Fig.3a



Fig.3b

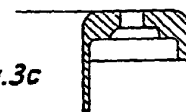


Fig.3c

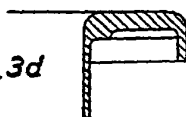


Fig.3d

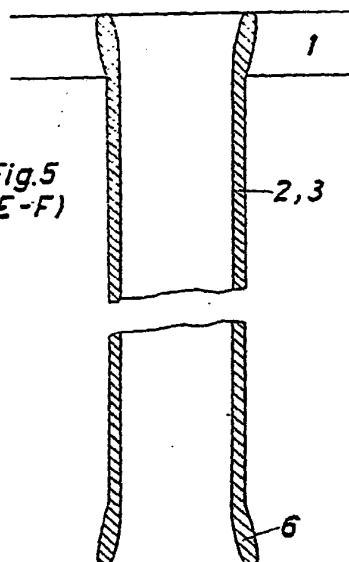


Fig.5
(E-F)

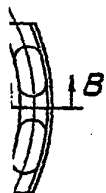


Fig.4a
(C-D)

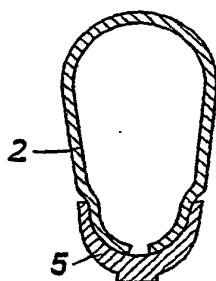
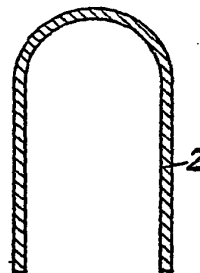


Fig.4b

Fig.4c



931694 COMPLETE SPECIFICATION
 2 SHEETS This drawing is a reproduction of
 the Original on a reduced scale
 Sheets 1 & 2

